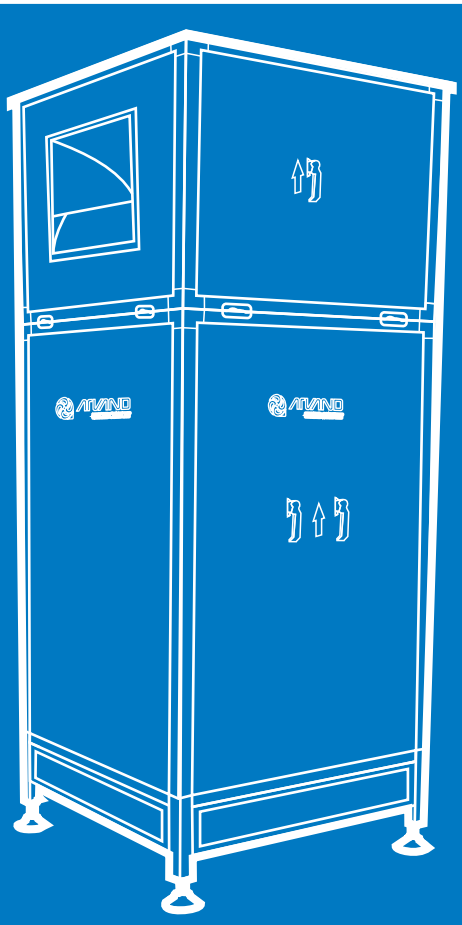
ARVIND
BEYOND COMFORT

TECHNICAL CATALOGUE

COMFORTECH



ComforTech™ Packaged Evaporative Air conditioner

Models:
AEAC-V-350
AEAC-V-600
AEAC-V-800

Heating Capacity
4.5 kW to 55 kW

Cooling Capacity
3 kW to 45 kW

CT-02- 39/01 | 2022

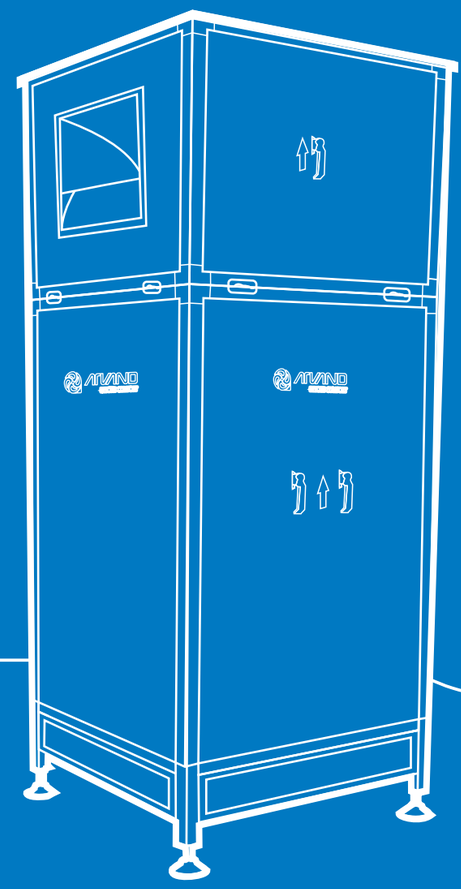
CE

CONTENT

PACKAGED EVAPORATIVE AIR CONDITIONER

COMFORTECH™

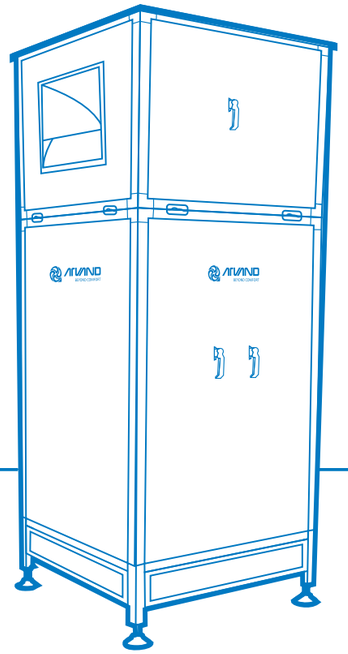
پکیج هواساز تبخیری کامفورتک



TECHNICAL CATALOGUE

INTRODUCTION

For years, Yekta Tahviyeh Arvand has earned a reputation for providing the industry with various highest qualities and most technologically advanced air conditioning systems in Iran.
Yekta Tahviyeh Arvand Company is proud to introduce a new air conditioning equipment. ComforTech™ packaged evaporative air conditioner provides a gentle flow of fresh and filtered air with desired temperature to make a comfortable and healthy indoor environment.
ComforTech™ is a direct evaporative air conditioner with hydronic heating coil.
These units are manufactured in vertical and horizontal models (AC-V & AC-H) with two cooling and heating modes and also ventilation. The ComforTech™ provides 3 ranges of heating and cooling capacities which is suitable for use in typical residential and light commercial application. ComforTech™ designed for maximum air flow and optimum air distribution with minimum energy consumption.
On summer, the unit operates in cooling mode. The cooling takes place as the outdoor warm and dry air is drawn over wetted special patented composite evaporative pads by an efficient direct drive fan and the water evaporates into the air as it gives up its heat that is required to evaporate the water.
On winter, the unit operates in heating mode. For this mode ComforTech™ is equipped with a finned tube (hot water to air) heat exchanger.
A special washable filter consisting of two layers of aluminum mesh with a layer of polymer fiber fabric between them performs the natural and passive electrostatically and physically purification of indoor air from fine particles and fibers usually are suspended in the air.
The ideal location for installing ComforTech™ packaged air conditioners is balcony, HVAC closet , patio and roof of building which have good fresh air ventilation.
ComforTech™ is patented both in principles of operation and design and is unique in world of air conditioning and is manufactured only by Yekta Tahviyeh Arvand company in Iran.



NOMENCLATURE

AEAC - V - 350 - T

- **AEAC**: Arvand Evaporative Air Conditioner Comfortech™
- **V**: Position
  - V: Vertical
  - H: Horizontal
- **350**: Air Flow Factor
  - 350: Max. Air Flow 3500 m^3/h
  - 600: Max. Air Flow 6000 m^3/h
  - 800: Max. Air Flow 8000 m^3/h
- **T**: Air Flow Discharge Direction
  - S: Side
  - T: Top

Design Features

ComforTech™ Evaporative Air conditioner

ComforTech™ is invented with 8 fundamental innovations which creates revolutionary features in independent heating and cooling of residential apartments, villas and small offices and makes it a new and modern air conditioner.

Air and Water Flow Streams

The first and main unprecedented innovation is designing counter flow streams of air and water which is new in principle of direct evaporative air conditioner operation.This operation produces optimum contacts between air and water whether in evaporative pads as wetted surfaces or in large raining water droplets between distance of bottom edge of pads and water sump as water droplets.

Composite Evaporative Pad

The second revolutionary innovation is the unique and patented evaporative rigid media pad named “Alapadic” manufactured specially for ComforTech™ in 21st century. This pad is long-life or lifetime and is self-cleaning. Alapadic is a composite type, recyclable, environment friendly pad. It isn’t made of natural materials such as aspen wood excelsior or cellulose paper which are good environment for growth of fungi or mould. The pad is totally hydrophilic and is cleaned and sterilized by domestic detergents and sterilizers poured in water sump and will be done automatically only by the ComforTech™ recirculating water pump normal operation.

Pump

The third innovation may be seems extra ordinary to conventional air coolers is utilizing a high quality submersible sump pump with higher head and flow in ComforTech™ packaged evaporative AC provides sufficient water circulation, wetting and washing operation and creates optimum cooling for indoor spaces. Water cooled by evaporation is circulated by a submersible IP 68 waterproof water pump which is located on unit water basin. Water is supplied to the top of the numerous sheets of rigid cooling pad by a closed loop of special water distribution system.

A patented high volume seepaging (not exudating) distribution hose on the top of the cooling pads ensures an even water distribution supply of the water which is evaporated by the warm and dry air passes through the hundreds layers of wetted pad. The rest of the water assists in washing the pad and incoming air, and is drained back to the water sump which is under the draining evaporating pads.

Water Distribution System

The fourth innovation in ComforTech™ is a patented high volume water seepaging (not exudating) distribution hose on the top of the cooling pads ensures an even water distribution supply of the water which is completely wetting surfaces of pads. Some of the water evaporates and the rest of the water assists in washing the pad and finally draining as a rain below the pads, washing incoming air and is drained back to the water sump which is under the draining evaporating pads.

Casings

Water sump, supporting structure and internal and external side panels are made of galvanized sheet metal with electrostatic powder coating painting to guarantee well resistance to atmospheric and aquatic corrosion problems. Accessibility to internal parts is possible by removing the front panel. For extraordinary maintenances also the rear or side panels can be removed.

Coil

All indoor air passes through heating coil is uniform. Precise design ensures maximum control over air delivery and temperature of air leaving the heater. Aluminum fins are die-formed for added strength and increased heat transfer. These fins are mechanically bonded to serpentine copper tube. Hot water circulation through coil tubes (normally changing hot water temperature from 75°C to 65°heat (normally 43°C) in indoor spaces in the winter by a gentle steady flow of warm air that is continuously being filtered just before heating coil and distributed in all rooms and spaces.

For condensing boiler installations, it should be ordered optional coil orders (changing hot water temperature from 50°C to 30°C).

The main or auxiliary electric heater are other optional orders.

Filter

The fifth innovation features in Comfortech™ is washing, cleaning and humidifying of dry and dusty incoming air which is the main purposes of the designers of ComforTech™ unit. In summer this job is done first by continuously confronting of incoming air stream with droplets raining and draining from evaporating pads bottom edges and hundreds passage of air and water ways which are produced by corrugated rigid wet pads. Dust and particles in air will adhere to them and will washed down to the water sump.
Comfortech™ has an Electret filter which is a special filter consisting of two layers of Aluminum mesh with a layer of nonwoven pad made of polymer fibers between them performs the natural or passive electrostatically and physically filtering and purification of indoor air from fine particles and fibers suspended in the air in winter heating mode.

Fan

The sixth innovation in ComforTech™ is the Metallic robust but lightweight forwarded blades centrifugal fan with special design. Blower wheels are accurately balanced and pitched to move maximum air quietly with minimum power consumption.

Electric Motor

The seventh features of ComforTech™ is using direct drive BLDC electric motor for Fan. This motor has advantages such as nearly instantaneous manually or automatically control of speed (rpm) and torque, high efficiency, and low energy consumption and maintenance. This motor controlled with an inverter electric drive. There is no need for shaft, big bearing, pulleys, belt and maintenance of them.

Smart Control

The eight features of ComforTech™ is smart control. A small room thermostat/ controller with touch panel r is installed on wall of a common space of home and is connected to ComforTech™ by 2 signal wires and user can control and select the desired command such as selecting cooling or heating modes, on- and off the unit, manual or auto speed control of fan, on and off the pump and selecting the desired temperature directly by this touch panel or its remote control. This panel indicates operating heating or cooling modes; on-off position of the fan; speed rate of the fan (5% to 100%) ; on- off position of the water pump and ambient and set temperatures.

Piping Connection

Hydraulic quick connection permits quick and easy connection of aluminum or plastic tube with no additional fitting. This connection is mounted rigidly to casing.
Clean, clear city water should be connected by aluminum or plastic tube and an isolating valve to unit for summer evaporative cooling

Optional Accessories

- UV lamp for sterilization of supply air.
- Cell phone control system.
- Electrical heater (main or auxiliary heating system).
- Make up water electric valve and sump electric level switch.
- Automatic (time-based) or manual bleed off valve for draining the water sump from touch panel.
- Luxury, nice and long-life stainless-steel covers.
- Lightweight aluminum covers.

Physical & Technical Data

Specification	Model	Unit	AEAC-V-350	AEAC-V-600	AEACV-800
Capacity	.Maximum Airflow@ 0 S.P	m^3/h	3500	6000	8000
	Maximum Airflow @ Static Pressure	$m^3/h@Pa$	3000@37.0	5000@50.0	6500@62.0
	Max Cooling Capacity	kW	18.0	35.0	47.0
	Max Heating Capacity	kW	25.0	38.0	51.0
	Evaporative Cooling Efficiency	-	80% ~ 90%	80 ~ 90%	80% ~ 90%
Electrical Supply	Pump Voltage-Ph-Hz/FLA)	V/A	220V-1~-50Hz/ 1.1A	220V-1~-50Hz/ 1.1A	220V-1~-50Hz/ 1.1A
	Motor With Inverter (Voltage/FLA)	-	180 ~ 250 VAC (Extended range: 120 ~ 275 VAC)/2.6	180 ~ 250 VAC (Extended range: 120 ~ 275 VAC)/2.6	180 ~ 250 VAC (Extended range: 120 ~ 275 VAC)/2.6
	Max Input Power	kW	0.814	0.814	0.814
	Normal Operating Power	kW	0.55	0.59	0.77
Fan/Motor	Type	-	Centrifugal Forward	Centrifugal Forward	Centrifugal Forward
	Electric Motor	-	BLDC (With Inverter)	BLDC (With Inverter)	BLDC (With Inverter)
	Control	-	Touch Panel with Remote Control	Touch Panel with Remote Control	Touch Panel with Remote Control
	Maximum Speed Motor	RPM	600	600	600
	Maximum Speed Fan	RPM	600	600	600
Heat and Mass Exchanger	direct Evaporative Pad	-	Metallic Based Rigid Composite Pad	Metallic Based Rigid Composite Pad	Metallic Based Rigid Composite Pad
	Heating Coil	-	Fin & Tube	Fin & Tube	Fin & Tube
	Connection Pipe Size	mm	32	32	32
Hydraulic	Pump	-	LEO (XKS 250P)	LEO (XKS 250P)	LEO (XKS 250P)
	City Water Connection	mm	6	6	6
	Float Valve	-	Adjustable Float Valve	Adjustable Float Valve	Adjustable Float Valve
	Tank Capacity	lit	75	80	85
Air Filter	Type	-	Electret AL/Fiber Filter	Electret AL/Fiber Filter	Electret AL/Fiber Filter
Duct Connections	Supply	mm	471 x 404	471 x 404	557 x 478
	Return	mm	532 x 660	592 x 660	752 x 660
Weight	-	Kg	195	250	305

Notes:
Data referred to the following conditions:
Cooling capacity condition according to Iran National Standard Organization (ISIRI/INSO 15858 and ISIRI/INSO 6016-2) with outside design dry bulb temperature 46°C and wet bulb temperature 24°C.
Rated heating capacity according to indoor temperature 20°C and RH 50% and hot water supply temperature 75C and return temperature–65 °C.
Unit weight is shipping weight not operating weight

Electrical Data

Model	Electrical Device Specification		Current (FLA)		Max. Input Power (kW)		Normal Operating Power(kW)
	Fan Motor with Inverter	Water Pump	Water Pump	Fan Motor with Inverter	Water Pump	Fan Motor with Inverter	Fan Motor With Water Pump
AEAC-V-350	180 ~ 250 VAC /1Ph (Extended range: 120 ~ 275 VAC)	220/1Ph/50Hz	1.1	2.6	0.25	0.57	0.550
AEAC-V-600	180 ~ 250 VAC /1Ph (Extended range: 120 ~ 275 VAC)	220/1Ph/50Hz	1.1	2.6	0.25	0.57	0.594
AEAC-V-800	180 ~ 250 VAC /1Ph (Extended range: 120 ~ 275 VAC)	220/1Ph/50Hz	1.1	2.6	0.25	0.57	0.770

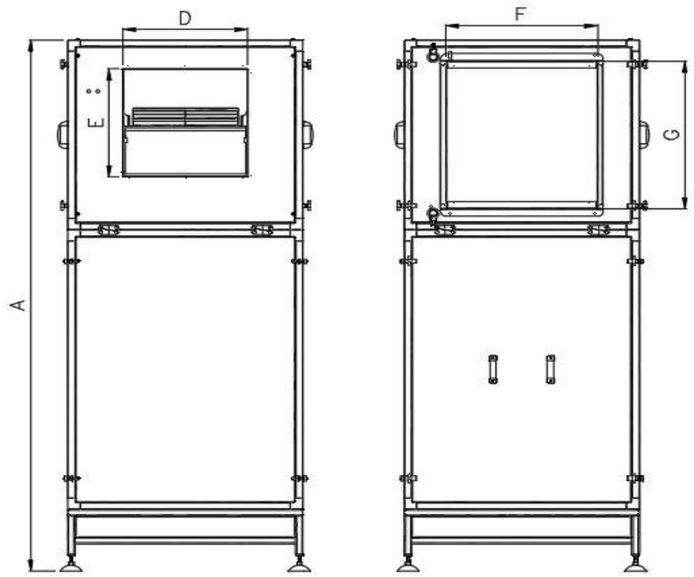
Note:
- FLA: Full Load Ampere.
- For Proper fuse selection refer total FLA.

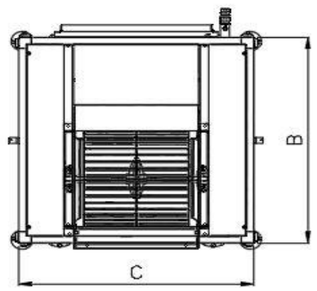
Sound Data

Model	Octave Band Centre Frequency								Total Sound Power	Sound Pressure		
	63 K	125 K	250 K	500 K	1000 K	2000 K	4000 K	8000 K	db	1 m	5 m	10 m
AEAC-V-350	69.6	67.3	62.6	63.3	59.1	57.2	53	45.8	73	65.5	51.5	45.5
AEAC-V-600	69.8	65.1	67.8	64.2	63.7	60	55.3	48.8	74	66.5	52.5	46.5
AEAC-V-800	72.2	68.3	68.6	63.2	61.4	57.9	53.4	46.3	75.4	67.9	53.9	47.9

Note:
- Unit placed in free field on reflecting surface (directional factor equal to 2).
- The sound power level is measured according to ISO 3744 standard.
- The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 meters from the external surface of the unit.

Dimension





Model	A	B	C	D	E	F	G	NPT Inlet & Outlet Connection
AEAC-V-350	2380	780	780	471	404	532	660	32mm
AEAC-V-600	2380	920	920	471	404	592	660	32mm
AEAC-V-800	2380	980	980	557	478	752	660	32mm

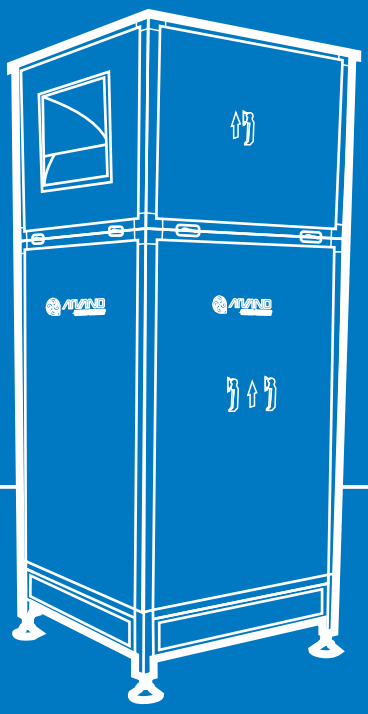
Note:
- All dimension parameters in mm.
- Inlet and outlet connection in mm.

SI & IP Units Conversion

HVAC Conversion Factors (SI & IP Metric)

Dimension	Multiply	By	To Obtain
Length	ft	0.3048	m
	m	3.28	ft
	in	2.54	cm
	in	25.4	mm
	cm	0.3937	in
Heat	Ton	12000	Btu/hr
	Ton	3.517	kW
	kW	0.2843	Ton
	Btu/hr	0.2931	W
	W	3.413	Btu/hr
	kW	3413	Btu/hr
	hp	2545	Btu/hr
power	hp	0.7457	kW
	kW	1.341	hp
Volume	CFM	0.000472	m3/s
	m3/S	2118.9	CFM
	GPM	0.0631	L/s
	L/s	2.119	GPM
Pressure	inWG	0.2491	kpa
	.inW.G	0.03602	psi
	Pascal	0.00403	.inW.G
	KPascals	0.145	Psi
	Psi	27.761	.inW.G
	Psi	6.895	kPascals
Weight	lbs	0.4536	kg
Velocity	ft/s	0.3048	m/s
	ft/min	0.00508	m/s
	m/s	196.85	ft/min

All data and contents in this document are subject to change without notice: 2022/01 – Ed.



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